

WHAT IS CLAIMED IS:

1 1. A method for allocating a plurality of resources in an electronic
2 system, comprising:
3 allocating a first group of one or more of the resources in accordance with first
4 requests for the resources, the first group being allocated for a
5 particular time period; and
6 subsequently allocating a second group of one or more of the resources for the
7 particular time period in accordance with regular requests, the first and
8 second group of resources being mutually exclusive.

1 2. The method as recited in claim 1 wherein the resources requested are
2 data paths through a communication network.

1 3. The method as recited in claim 2 further comprising:
2 receiving the first requests for the first group of resources in a centralized
3 scheduler, the centralized scheduler residing in one of a plurality of
4 requesters on the communication network; and
5 receiving the regular requests at a centralized arbiter separate from the
6 centralized scheduler.

1 4. The method as recited in claim 1 wherein the first requests include
2 requests for one or more resources on a periodic basis.

1 5. The method as recited in claim 4 wherein the first requests for one or
2 more resources on a periodic basis are for transfer of at least one of multicast data and
3 isochronous data.

1 6. The method as recited in claim 4 wherein the regular requests include
2 non-periodic data.

1 7. The method as recited in claim 1 wherein the first requests are for
2 transfer of at least one of multicast data and isochronous data.

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1 8. A network system comprising:
2 a data transport medium attached to a plurality of sources and a plurality of
3 targets;
4 an arbiter coupled to receive first requests for transfers from one or more of
5 the sources to one or more of the targets during a time slot on the data
6 transport medium and coupled to receive regular requests from the
7 sources for transfers from one or more of the sources to one or more of
8 the targets during the time slot, the arbiter allocating the targets to the
9 sources in accordance with the first requests and then in accordance
10 with the regular requests.

1 9. The network system as recited in claim 8 wherein the first requests are
2 supplied to the arbiter as a precalculated schedule.

1 10. The network system as recited in claim 9 wherein the precalculated
2 schedule supplied to the arbiter is always conflict free.

1 11. The network system as recited in claim 9 further comprising a
2 centralized scheduler, responsive to preallocation requests for pre-allocated slots on
3 the data transport medium to generate the precalculated schedule for the preallocation
4 requests.

1 12. The electronic system as recited in claim 11 wherein the centralized
2 scheduler is implemented as software executable on a node coupled as one of the
3 sources on the network system.

1 13. The network system as recited in claim 9 wherein the precalculated
2 schedule includes a scheduled transfer of isochronous traffic.

1 14. The network system as recited in claim 13 wherein the precalculated
2 schedule includes a scheduled transfer of periodic traffic.

1 15. The network system as recited in claim 9 wherein the precalculated
2 schedule includes a scheduled transfer of multicast data in which the data is
3 transferred from a single source to a plurality of targets.

1 16. The network system as recited in claim 15 wherein the multicast data is
2 part of a scheduled periodic multicast transfer.

1 17. The electronic system as recited in claim 8 wherein the transport
2 medium includes a synchronous switch.

1 18. The network system as recited in claim 8 wherein the arbiter receives
2 preallocation requests for pre-allocated slots and regular requests for slots on the data
3 transport medium, the arbiter giving priority to preallocation requests in allocating
4 resources.

1 19. The network system as recited in claim 18 wherein the arbiter receives
2 a vector including the preallocated requests and the regular requests from the sources
3 on the network.

1 20. The network system as recited in claim 19 wherein the sources receive
2 the preallocated requests from a centralized scheduler of the preallocated requests.

1 21. An arbitration apparatus for arbitrating requests from a plurality of
2 requesters for a plurality of resources, comprising:
3 means for receiving regular requests for resources from the requesters;
4 means for receiving a precalculated schedule; and
5 means for allocating resources by giving requests represented in the
6 precalculated schedule priority over the regular requests in allocating
7 resources.

1 22. The arbitration apparatus as recited in claim 21 wherein the resources
2 are input and output nodes of a communication network and the transport mechanism
3 includes a network switch.

1 23. A method for allocating a plurality of resources in a communication
2 network, comprising:
3 during a first arbitration phase, reserving a first portion of the resources for a
4 particular time period on the network in response to requests for
5 scheduled transfers;
6 during a second arbitration phase allocating a second portion of the resources
7 in response to regular requests; and
8 transferring data across the communication network according to the
9 allocating of resources.

1 24. The method as recited in claim 23 wherein the first portion is reserved
2 in a scheduler separate from an arbiter, the arbiter allocating the second portion, the
3 scheduler providing a schedule to the arbiter indicating the reserved first portion.

1 25. The method as recited in claim 24 wherein the schedule is guaranteed
2 not to have conflicts.

1 26. The method as recited in claim 24 wherein the schedule has conflicts in
2 requests for the first portion of resources.

1 27. The method as recited in claim 23 wherein the resources requested are
2 slots in the communication network connecting an input port to one or more output
3 ports in a network switch.

1 28. The method as recited in claim 23 wherein the regular requests are for
2 resources during a single slot in the communication network and wherein the requests
3 for scheduled transfers include requests for periodic slots on the network.

1 29. The method as recited in claim 28 wherein the requests for periodic
2 slots are for transfer of at least one of multicast data and isochronous data.

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